

83781

S/056/60/039/003/045/045  
B004/B060

9.4300 (1035, 1138, 1143)

AUTHOR: Khaykin, M. S.TITLE: Paramagnetic Resonance on a Single Crystal of TinPERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, 1960,  
Vol. 39, No. 3 (9), pp. 899-901

TEXT: The author studied the electron paramagnetic resonance on a single crystal of pure tin (impurity content  $< 6 \cdot 10^{-5}\%$ ). The single crystal constituted the inner conductor of a resonator adjusted to  $9.35 \cdot 10^9$  cps. Measurements were made at  $2.3^\circ\text{K}$  and with frequency modulation. Figs. 1, 2 show the paramagnetic resonance lines of Sn in addition to those of diphenyl-picryl hydrazyl taken as a standard. Therefrom the author calculated the  $g$ -factor for the conduction electrons of tin,  $g_{\text{Sn}} = 1.9945 \pm 0.0003$ , and the relaxation time,  $T_2 = 1.7 \cdot 10^{-8}$  sec. This corresponds to a 1 - 2 cm electron path length, without there appearing any spin flip; (mean free path: 0.1 cm). The diffusion length  $\delta$  of the spin is taken as about 0.3 cm from Refs. 3, 10. Thus, nuclei throughout

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18.8100 1138 1144 1482

S/120/61/000/003/018/041  
E202/E135<sup>27706</sup>

AUTHOR: Khaykin, M.S.

TITLE: Study of the surface resistance of metals by means of frequency modulation

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No.3, pp.95-103

TEXT: A new method of measuring surface resistance of a single crystal of metal in the superconducting region is described. This method is capable of high accuracy quantitative measurement of weak anisotropic effects by measuring the change in the surface conductivity amounting to only a fraction of a per cent of the total value. Thus, in the first instance, the method is directed to the study of anomalous skin effects, cyclotron resonance-like effects and general measurements of surface resistance of metals, where it has considerable advantages over the orthodox methods based on the calorimetric estimation of the Joule heat dissipated by the H.F. currents, or the evaluation of the electric parameters of the resonator containing the sample. Further applications include measurements of changes in the dielectric permittivity or magnetic permeability arising from electron paramagnetic resonance, Card 1/3

27706

Study of the surface resistance of ... S/120/61/000/003/018/041  
E202/E135

diamagnetic resonance in semiconductors, ferromagnetic resonance, etc. In the present method, the sample in the shape of a rectangular plate or a disc forming the integral part of the H.F. electromagnetic resonator, is placed in a steady and uniform magnetic field. The change in the field affects the surface resistance of the sample which in turn changes the parameters of the resonator. The latter forms part of a reaction coupling of an H.F. oscillator and influences the frequency of the generated signal. Hence, the modulation of the magnetic field leads to the frequency modulation in the generated signal. The surface resistance of the sample is found in terms of its first derivative w.r.t. magnetic field, by measuring the frequency deviation. The experimental results show that surface reactance and surface resistance values are measured with the sensitivity of approximately  $10^{-6}$  oe<sup>-1</sup>, estimated as equal to the noise level. The H.F. employed was of the order of 9400 Mcs. Detailed theoretical and experimental data are included. Acknowledgments are expressed to P.L. Kapitsa, A.I. Shal'nikov for their interest in the work, and to G.S. Chernyshev and A.N. Vetchinkin, K.A. Zhdanov and V.A. Yudin

Card 2/3

Study of the surface resistance of ... <sup>27706</sup> S/120/61/000/003/018/041  
E202/E135

for technical assistance. There are 7 figures and 20 references:  
10 Soviet and 10 non-Soviet. The four most recent English  
language references read as follows;

- Ref.3: M.A. Biondi, M.P. Garfunkel, A.O. McCoubrey, Phys. Rev.,  
1956, Vol.101, 1427; M.A. Biondi, M.P. Garfunkel, Phys.  
Rev., 1959, Vol.116, 862.
- Ref.4: E. Fawcett, Proc. Roy. Soc. A, 1955, Vol.232, 519;  
E. Fawcett, Phys. Rev. Let., 1959, Vol.3, 139.
- Ref.8: J.K. Galt, W.A. Yager, F.R. Merritt, B.B. Cetlin, H.W. Dail,  
Phys. Rev., 1955, Vol.100, 748; J.K. Galt, W.A. Yager,  
F.R. Merritt, B.B. Cetlin, Phys. Rev., 1959, Vol.114, 1396.
- Ref.13: A.F. Kip, D.N. Langenberg, B. Rosenblum, G. Wagoner,  
Phys. Rev., 1957, Vol.108, 494.

ASSOCIATION: Institut fizicheskikh problem AN SSSR  
(Institute of the Problems of Physics, AS USSR)

SUBMITTED: June 21, 1960

Card 3/3

9,4230(1532)

27707  
S/120/61/000/003/019/041  
E095/E135

AUTHOR: Khaykin, M.S.

TITLE: Travelling-wave tube oscillator stabilised by a superconductive cavity resonator

PERIODICAL: Pribery i tekhnika eksperimenta, 1961, No.3, pp.104-106

TEXT: In a conventional oscillator design, frequency stability is determined by resonator Q, which at high frequencies is limited by skin-effect. Resonator Q can be increased 1000 times by utilizing the superconductivity phenomenon which, according to earlier work of the author, occurs for lead at 7 °K. The block-schematic of the oscillator employing travelling wave tube and lead resonance cavity operating on wavelength of about 3.2 cm at 2 °K is shown. The cavity Q is about  $3 \times 10^7$ . Frequency stability is given by

$$\frac{df}{f} \approx \frac{\pi}{Q} \frac{d\ell}{\lambda}$$

where  $\ell$  is length of signal path in the generator, assuming that resonator characteristics are stabilised and it is lightly coupled

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Travelling-wave tube oscillator .....

27707

S/120/61/000/003/019/041  
E095/E135

to the external circuit. Two oscillators were constructed on these principles. Measured frequency stability is  $10^{-9}$  approximately, over a period of one hour. Frequency stability over shorter periods was not measured but it should be considerably higher. This is particularly true for periods of less than the decay period of the resonator which is about 1 ms. Power output is 1 mW. An oscillator constructed on the above principles has been utilised for a long time for very accurate measurements in the course of research work (Ref.2: M.S. Khaykin, PTE, 1961, No.3, 95, and Ref.7: M.S. Khaykin, Zh. eksperim. i teor. fiz., 1959, Vol.37, 1473; 1960, Vol.39, 212, 513, 899). Acknowledgments are expressed to P.L. Kapitsa, A.I. Shal'nikov, Ye.G. Solov'yev and G.S.Chernyshev. There are 1 figure and 7 references; 6 Soviet and the following English language reference:

Ref.4: H.R. Johnson, J.R. Whinnery, Trans. I.R.E., PGED-2, 1953, Jan., pp.11-35.

ASSOCIATION: Institut fizicheskikh problem AN SSSR  
(Institute for Problems of Physics, AS USSR)

Card 2/2

SUBMITTED: June 21, 1960

9.2580

S/019/61/000/013/014/075  
A154/A128

AUTHOR: Khaykin, M.S.

TITLE: A method of stabilizing frequency

PERIODICAL: Byulleten' izobreteniy, no. 13, 1961, 26

TEXT: Class 21a<sup>4</sup>, 802. No. 139343 (704851/26 of January 7, 1960).  
This invention consists in the use of a superconductive metal cavity resonator for stabilizing frequency.

/B

Card 1/1

31773

S/056/61/041/006/016/054  
B102/B138

24.7700 (116, 1164, 1385)

AUTHOR: Khaykin, M. S.

TITLE: Direct measurement of conduction electron momentum of a metal

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 41,  
no. 6(12), 1961, 1773-1779

TEXT: A new method for direct measurement of the electron momentum of a metal and investigation of its Fermi surface is described. It is based on "cutting off" the electron orbits at cyclotron resonance. E. A. Kaner (DAN SSSR, 119, 471, 1958) and M. Ya. Azbel' (ZhETF, 39, 400, 1960) noted the theoretical possibility of measurement. The momentum of an electron moving on the greatest closed orbit within a metal plate of the thickness  $D_z$ , which is placed in a constant magnetic field  $H_y$ , is given by

$|p_x| = H_y D_z e / 2c$ . If  $H_y$  is chosen such that the electron orbit equals  $D_z$ ,  $p_x$  will give the maximum value of the momentum component.  $H_y$  is determined from measurements of the highest orders  $n$  and  $n+1$  of resonance in plates

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B102/B138

Direct measurement of conduction ...

differing in thickness by one order of resonance:  $H_n > H_y > H_{n+1}$ . The accuracy is increased with  $n$ , i. e. with the plate thickness. In the case of cyclotron resonance  $p_x = m^* \omega D_z / 2n$ ,  $m^*$  being the effective electron mass,  $\omega$  the h-f field frequency. The only disadvantage of the method is the necessity of observing high-order resonances and very high quality single crystals are required. The method was checked with high purity tin single crystal discs, cut parallel to the (010) plane. These were placed in the cavity resonator so that the h-f current hit the disc in the  $[100]$  direction. The magnetic field was applied in the  $[001]$  direction. Resonance  $n=26$  was exceedingly clear;  $n=27$  was not observed. With the formulas given, the electron momentum at the section of the Fermi surface with the (001) plane was determined:  $p_{[100]} = (5.57 \pm 0.15) \cdot 10^{-20}$  g·cm/sec. The mean velocity of these electrons was found to be  $v_{(001)} = \omega D_z / 2n = (1.10 \pm 0.01) \cdot 10^8$  cm/sec.  $m^*$  is measured with an accuracy of  $\pm 1\%$ , and the momentum with  $\pm 2.5\%$ . For the electrons of this group

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Direct measurement of conduction ... <sup>31773</sup>  
S/056/61/041/006/016/054  
B102/B138

(within the range of  $\pm 26^\circ$  of field direction)  $p = (9.98 \pm 0.15) \cdot 10^{-20} \text{ m}^*/\text{m}_e$   
( $m^* = 0.558 m_e$ ). From the results the Fermi surface section shown in Fig. 4 was constructed which corresponds to the open quarter of the Brillouin zone shown in Fig. 5. The results are compared with those of N. Ye. Alekseyevskiy, Yu. P. Gaydukhov et al. (ZhETF, 39, 1201, 1960; 41, 1079, 1961), A. I. Galkin, E. A. Kaner and A. P. Korolyuk (ZhETF, 39, 1517, 1960). P. L. Kapitza is thanked for interest, R. T. Min, G. S. Chernyshev and V. A. Yudin for assistance. There are 5 figures and 15 references: 12 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: A. V. Gold, M. G. Priestley, Phil. Mag., 5, 1089, 1960; W. A. Harrison, Phys. Rev. 118, 1190, 1960; T. Olsen, The Fermi Surface, ed. W. A. Harrison and M. B. Webb (Proc. of Int. Conf., 1960), N. Y., 1960, p. 237.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences, USSR)

SUBMITTED: July 11, 1961

Card 3/4 3

S/056/62/042/001/004/048  
B125/B108

AUTHOR: Khaykin, M. S.

TITLE: Study of the Fermi surface of tin by the cyclotron resonance method

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 27 - 34

TEXT: Cyclotron resonance spectra are studied by means of a band resonator. Monocrystalline disks (18 mm diameter, 1-2 mm thick) made of high-purity tin with a resistivity ratio  $\rho(20^\circ\text{C})/\rho(3.75^\circ\text{K}) = 1.4 \cdot 10^5$  served as specimens. Fig. 4 shows the effective masses of the conductivity electrons of tin determined from the cyclotron resonance spectra, including the holes which do not differ from the electrons in the present experiments. Some characteristic properties of cyclotron resonances are given in the table. Resonances at  $\vec{H} \parallel \vec{J}$  and  $\vec{H} \perp \vec{J}$ , respectively, which correspond to extreme cross sections of the Fermi surface or to the elliptic base points, as well as resonances observed at intermediate polarizations, belong to the noncentral

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Study of the Fermi surface of...

S/056/62/042/001/004/048  
B125/B108

Fermi surfaces. Some typical characteristics of the very complicated Fermi surface had been studied by N. Ye. Alekseyevskiy, Yu. P. Gaydukov (ZhETF, 40, 1079, 1961). Fig. 5 shows the hole surfaces of the third and fourth bands of tin which correspond best to available data. Tube  $\beta$  has the diameter  $\Delta = 0.17(2\pi/a) = d$ , and the cross-sectional area of tube  $\delta$ , which is considered to have the form of a circular cylinder, amounts to  $0.023(2\pi/a)^2$ .

The area of the orbit,  $\epsilon$ , is  $(h+2\Delta)d = 0.14(2\pi/a)^2$ . The dimensions of the third band suggest cyclotron resonances over the tubes  $\beta$  allowing for deflections of the field from the  $[001]$  and  $[100]$  axes in the  $(010)$  plane through  $\sim 20^\circ$  and  $\sim 35^\circ$ , respectively. No other method is so sensitive and accurate as the measurement of the effective electron masses by the cyclotron resonance method. P. L. Kapitsa is thanked for interest, V. A. Yudin for technical assistance. There are 5 figures, 1 table, and 45 references; 3 Soviet and 7 non-Soviet. The four most recent references to English-language publications read as follows: F. R. Merritt, P. H. Schmidt. Phys. Rev. Lett., 6, 458, 1961; J. E. Aubrey, R. G. Chambers. Phys. Chem. of Solids, 3, 128, 1957; J. E. Aubrey. Phil. Mag., 2, 1001, 1960; A. V. Gold, M. G. Priestley. Phil. Mag., 2, 1089, 1960; W. A. Harrison. Phys. Rev., 118, 1190, 1960.

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according to Gold and Priestley;  $\varphi$  - angle between H and the direction  $[001]$ ;

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S/056/62/042/001/005/048  
B125/B108

AUTHORS: Knaykin, M. S., Mina, R. T.

TITLE: Investigation of the Fermi surface of lead by the cyclotron resonance method

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 42, no. 1, 1962, 35 - 41

TEXT: Cyclotron resonance in the (100) and (011) planes of rectangular single-crystal plates of lead with a resistivity ratio  $\rho(20^\circ\text{C})/\rho(4.2^\circ\text{K}) = (0.6 - 1) \cdot 10^4$  was measured by frequency modulation at  $9.47 \cdot 10^9$  cps in a magnetic field of 800 - 7000 oersteds at  $2^\circ\text{K}$ . Two specimens with the high-frequency current and magnetic field directions are shown in Fig. 1. The ratio  $\mu = m^*/m_e = H_{\omega}^{-1}/(H_{n+1}^{-1} - H_n^{-1})$  (1) ( $m^*$  = effective electron mass,  $m_e$  = free electron mass,  $H_{\omega}$  = field strength at electron paramagnetic resonance,  $H_n$  = field strength at cyclotron resonance of the order  $n$ ). The depth of cyclotron resonance of any group belonging to a certain effective

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Investigation of the Fermi surface...

S/056/62/042/001/005/048  
B125/B108

mass depends on the direction of the magnetic field. However, group  $\{1\}$  has the deepest resonance of all. The lower and upper parts of the polar diagram (Fig. 3) show  $\mu(\theta)$  data for specimens 1 and 2, respectively. The Fermi surface model presupposes free electrons in the weak field of the crystal, the first Brillouin band filled up, a second band with closed central hole surface, and a third band filled up near the edges. Cyclotron resonances are observed on the outermost closed orbits with an orbital plane perpendicular to the magnetic field. The electron surface of the third band is shown in Fig. 4. The proportionality between the effective electron mass and the tube cross section is the better for a real Fermi surface, the less this surface deviates from cylindrical form. The deep cyclotron resonances on the  $\{1\}, \{2\}, \{3\}, \{4\}$  orbits are due to the nearly cylindrical form of the tubes. With a magnetic field parallel to the  $[111]$  axis, cyclotron resonance arises on orbit  $\psi$ .  $\oint v_F^{-1} dl = 2\pi m^*$  according to I. M. Lifshits, M. Ya. Azbel', and M. I. Kaganov (ZhETF, 31, 63, 1956). Cyclotron resonances were observed on all extreme orbits lying in the multiply connected Fermi surface of the third band. Data are in good qualitative and quantitative agreement with the form of the third band

Card 2/63

Investigation of the Fermi surface...

S/056/62/042/001/005/048  
B125/B100

Fermi surface as constructed in free electron approximation. P. L. Kapitza is thanked for interest, G. S. Chernyshev and V. A. Yudin for technical assistance. There are 5 figures, 2 tables, and 8 references; 5 Soviet and 3 non-Soviet. The three references to English-language publications read as follows: J. E. Aubrey. Phil. Mag., 2, 1001, 1960; Ref. 4: A. V. Gold. Phil. Trans. Roy. Soc., 251, 35, 1958; W. A. Harrison. Phys. Rev., 118, 1190, 1960.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences USSR)  
Fizicheskiy institut Akademii nauk Arnyanskoy SSR (Physics Institute of the Academy of Sciences Arnyanskaya SSR)

SUBMITTED: July 11, 1961 (initially), and November 2, 1961 (after revision) ✓

Legend to Fig. 1: (1) specimen 1, (2) specimen 2.

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S/056/62/043/001/008/056  
B125/B102

AUTHOR: Khaykin, M. S.

TITLE: Investigation of the shape of one cross section of the Fermi surface of tin

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 1(7), 1962, 59-65

TEXT: The cross-section diameters of the "barrel-shaped" hole Fermi surface of the fourth band in tin were measured by the method of frequency modulation on a wavelength of  $\sim 3.2$  cm. Two effects were considered in the measurements: (1) cutoff of cyclotron resonances and (2) cutoff of electron orbits in a non-resonance field. The cutoff field strength increases with increasing angle up to  $\varphi = 33^\circ$ . The derivative of the resistance (resistance + reactance) with respect to the field strength which is determinant for the diameter of the extreme electron orbits has a greater absolute value for thin than for thick specimens. This holds true until the diameter of the extreme electron orbits is equal to the thickness of the specimen. The non-resonance orbits found with the

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Investigation of the shape of ...

S/056/62/043/001/008/056  
B125/B102

aid of the cutoff field strength cover the entire section. Investigations into cyclotron resonance confirmed the existence of two types of extreme electron orbits: The maximum electron orbit  $\xi$  lies in the section of the coordinate face (001), the minimum electron orbit  $\psi$  lies in the section of the "barrel" face (2 orbits) parallel to (001). The suitability of the model of almost free conduction electrons is confirmed by a good agreement of the observed shape of the section of the fourth band face with the results obtained with this model. There are 5 figures.

ASSOCIATION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Physical Problems of the Academy of Sciences USSR)

SUBMITTED: March 6, 1962

Fig. 5. Hole Fermi face for the fourth band of tin reduced to the principal Brillouin band. The cross section studied here is marked by a bold line. Extreme orbits when the magnetic field is parallel to [001]:  $\xi$  - maximum,  $\psi$  - minimum orbit (two orbits, their approximate position is given).

Card 2/02

44228

S/056/62/043/006/017/067  
B102/B104

24,7000

AUTHORS: Khaykin, M. S., Mina, R. T., Edel'man, V. S.

TITLE: Cyclotron resonance and quantum oscillations of the surface impedance of bismuth

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 6(12), 1962, 2063-2073

TEXT: Disc-shaped Bi single crystals of 18 mm diameter and 1.5 mm thick were used to measure simultaneously the cyclotron resonance and the quantum oscillations of the surface impedance at  $9.5 \cdot 10^9$  cps and at  $1.7^\circ \text{K}$ . The measurements were made by the method of frequency modulation (PTE, 3, 95, 1961): the logarithmic derivative of the surface reactance was measured as a function of the inverse magnetic field strength applied to the sample parallel to its surface. Of two of the samples this surface agreed with the basal plane ( $1 C_3$ ) and for the two others the axes  $C_3$  and  $C_2$  lay in the surface plane. The cyclotron resonance was measured in order to determine the effective masses  $\mu = m^*/m_0 = e/m_0 c \omega_0 H^{-1}$  of the

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S/056/62/043/006/017/067

B102/B104

Cyclotron resonance and quantum oscillations...

carriers and to explain the characteristics of the effective mass anisotropy;  $\Delta_H^{-1}$  is the period of cyclotron resonances measured in the plane of the sample with rotating field. The characteristics of the electron and hole Fermi surfaces. The main result of the investigations was the determination of the extremal cross section areas  $S$  of the Fermi surface perpendicular to  $\vec{H}$ . They were calculated from the quantum oscillation periods  $\Delta H^{-1}$ :  $S = eh/c\Delta H^{-1}$ . At angles equal to or less than  $30^\circ$  between  $\vec{H}$  and  $C_2$  the effective electron mass was proportional to  $S$ . The end-point energy of the Bi electrons was calculated:

$E_0 = S/2\pi\mu m_e = (2.5 \pm 0.1) \cdot 10^{-14}$  erg, a value, that corresponds to an effective temperature of  $181 \pm 7^\circ K$ ; the corresponding electron velocity is  $v_0 = \sqrt{2E_0/\mu m_e} = (7.7 \pm 0.2) \cdot 10^7$  cm/sec. Some more details on the Fermi surface are discussed. There are 6 figures.

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Cyclotron resonance and quantum oscillations... S/056/62/043/006/017/067  
B102/B104

ASSOCIATION: Institut fizicheskikh problem Akademiya nauk SSSR  
(Institute of Physical-Problems of the Academy of Sciences  
USSR)

SUBMITTED: July 20, 1962

Card 3/3

1963-104/104  
4002-1101

AUTHORS: Khaykin, M. S., Derstuganov, G. I., Levkoyev, I. I., Kukhtin, V. A.,  
Shamil'skaya, D. B.

TITLE: On the developing properties of some 4-aminopyrazolones (5) and  
their derivatives. Report II

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1963, 82, abstract 3D560  
("Tr. Vses. n.-i. kinofotoin-ta". 1962, no. 40, 5 - 16)

TEXT: A synthesis was made of some 1-phenyl and 1-sulphophenyl-3-carb-  
methoxy- and 3-carbalcoxymethyl-4-aminopyrazolones (5). The developing proper-  
ties of these compounds were investigated. It is shown that the conservation  
of weakly alkaline developing solutions, containing 4-aminopyrazolones, depends  
to a large extent on the electron character of the substitutes in the 1st and  
3rd positions of these compounds. It is made clear that the introduction of  
electronegative substitutes into the 1st and 3rd position of 4-aminopyrazolones

58-100/003/042/104  
A062/A101

Author: Akhmedzyanov, M. A., Slesareva, V. I., Khaykin, M. S., Kukhtin, V. A., Borin, A. V.

TITLE: About the influence of some antiferolants on the photographic properties and conservation:

Source: Referativnyy zhurnal, Fizika, 1979, No. 1, No. abstract RD575 ("Tr. Vses. nauch. kinofotograf. tsentra", 1979, No. 1, p. 1-2)

Summary: A study was made on the influence of some derivatives of polyphenols and hydrazine on the photographic properties and conservation of sensitized

Notes: Complete translation.

KHAYKIN, M.S.; SHAMIL'SKAYA, D.B.; FEDORINA, L.G.

Developing properties of hydroxybenzoylpyrogallol. Zhur.nauch. i  
prikl.fot. i kin. 8 no.5:375-376 S-0 '63. (MIRA 16:9)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo kinofotoinsti-  
tuta (NIKFI), Kazan'.

KHAYKI, M.S.; SHAMIL'SKAYA, D.B.; FEDORINA, I.G.

Developing properties of some esters of polyhydroxybenzols.  
Zhur. nauch. i prikl. fot. i kin. 8 no.6:461-463 N-D '63.  
(MIRA 17:1)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo kinofo-  
toinstituta, Kazan'.

KHAYKIN, M.S.; PETROVA, N.L.; KUKHTIN, V.A.

Chlorination of dihydroxycoumarins. Zhur.ob.khim. 33 no.12:3941-  
3943 D '63. (MIRA 17:3)

1. Kazanskiy filial Vsescyuznogo nauchno-issledovatel'skogo kino-  
fotoinstituta.



1. THE FOLLOWING INFORMATION IS UNCLASSIFIED

DATE 10/11/01 BY 60322 UCBAW/STP

2. DATE 10/11/01 BY 60322 UCBAW/STP

3. DATE 10/11/01 BY 60322 UCBAW/STP

EDEL'MAN, V.S.; KHAYKIN, M.S.

Standing magnetic plasma waves in bismuth related to hybrid  
resonance. Zhur. eksp. i teor. fiz. 45 no.3:826-828 S '63.

(MIRA 16:10)

1. Institut fizicheskikh problem AN SSSR.

(Magnetohydrodynamics)

(Plasma (Ionized gases))

MINA, R.T.; KHAYKIN, M.S.

Use of the cyclotron resonance method in studying the Fermi  
surface of lead. Zhur. eksp. i teor. fiz. 45 no.5:1304-1316  
N '63. (MIRA 17:1)

1. Institut fizicheskikh problem AN SSSR i Fizicheskii institut  
Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii  
SSSR.

KHAYKIN, M.S.; FAL'KOVSKIY, L.A.; EDEL'MAN, V.S.; MINA, R.T.

Properties of magnetic plasma waves in bismuth single crystals.  
Zhur. eksp. i teor. fiz. 45 no.6:1704-1716 D '63. (MIRA 17:2)

1. Institut fizicheskikh problem AN SSSR i Fizicheskiy institut  
Gosudarstvennogo komiteta po ispol'zovaniyu atomnoy energii  
SSSR, Yerevan.



1950.04.34

magnetoplasma waves in bismuth; other factors affecting the Fermi  
level. Possible future research in this field is outlined, along with  
some still unexplained problems, such as the oscillatory behavior of the surface  
resistance of single crystals in weak magnetic fields. (Sov. Phys. JETP) Ka-  
shchukin, V. I. Institute for Physical Problems. 1950. 14 figures and 9 formulas.

Institute for Physical Problems, Acad. Sci. USSR, Moscow

1950.04

ENCL: 00

1950.04.34

OTHER: 002

KHAYKIN, M.S.; SHAMIL'SKAYA, D.B.; FEDORINA, L.G.

Developing properties of the alkyl derivatives of 7,8  
dihydroxybenzopyrylium chloride. Zhur. nauch. i prikl. fot.  
i kin. 8 no.3:209-210 My-Je '64. (MIRA 18:11)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo kinofoto-  
instituta Kazan'. Submitted January 7, 1964.

EMT(1)/EWG(k)/EPA(sp)-2/EPA(w)-2/EE7(t)/EEC(b)-2/EMA(m)-2 Pz-6/  
 TJP(c)/AFWL/SSD/AM(p)-2/ESD(t)/RAEM(t) AT  
 ACCESSION NR: AP4046402 S/0056/64/047/003/0878/0885

AUTHORS: Khaykin, M. S.; Edel'man, V. S.

TITLE: Measurement of bismuth conduction electron <sup>21</sup> momenta and observation of their reflection by the surface

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 47, no. 3, 1964, 878-885

TOPIC TAGS: bismuth, single crystal, conduction electron, surface impedance, cyclotron resonance, surface property

ABSTRACT: The momentum of the conduction electrons in single crystals of bismuth approximately 0.2 mm thick was measured by the cyclotron resonance cutoff method and found to be  $(5.4 \pm 0.15) \times 10^{-22}$  g-cm/sec in the direction of the binary axis. The investigations were made by a frequency modulation method (M. S. Khaykin, PTE, No. 3, 95, 1961) at frequencies between 9.75 and 8.75 Gc. 'The prepara-

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L 2082-65

ACCESSION NR: AP4046402

5

tion of the sample was described by the authors in ZhETF v. 43, 2063, 1962. The crystals were placed in strip resonators (single strips for plane-parallel samples and double strip for samples with wedge-like part) and kept at 1.7--1.5K during the experiment. An additional peak of the surface impedance of bismuth was observed at a field smaller than the cutoff field ( $\sim 3$  Oe), and is attributed to cyclotron resonance of the electrons experiencing specular reflection from the surface of the sample. A characteristic feature of this peak is that it moves in a direction opposite to that of the cyclotron resonances when the frequency of the electromagnetic field is decreased. Such a behavior can be explained if it is assumed that this peak is connected with cyclotron resonance on the electrons experiencing specular reflection from one of the surfaces of the sample. Several experiments are described, the results of which agree with this explanation. "The authors thank P. L. Kapitsa for interest and attention to the work, R. T. Mina and L. A. Fal'kovskiy for a discussion, and G. S. Cherny'shev and V. A. Yudin for

Card 2/3

L 2032-65

ACCESSION NR: AP4046402

technical help." Eng. art. has: 6 figures, 5 formulas, and 1 table.

ASSOCIATION: Institut fizicheskikh problem Akademii (nauk SSSR  
(Institute of Physics Problems, Academy of Sciences SSSR)

SUBMITTED: 17Apr64

ENCL: 00

SUB CODE: SS, NP

NR REF SOV: 007

OTHER: 003

Card 3/3

KHAZKIN, M.S.; LEVKOYEV, I.I.; KORHTIN, Y.A.

Synthesis of certain 3-methyl and 3-phenyl-4-amino-5-pyrazolinones.  
Zhur. org. khim. 1 no.1:133-136 Ja '65. (MIRA 18:5)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo kinofoto-  
instituta.





KHAYKIN, M.S.; FEDORINA, L.G.; FAKHRUTDINOV, A.S.; KUKHTIN, V.A.

Synthesis of some derivatives of 7,8-dihydroxybenzopyrylium  
chloride and 7,8-dihydroxycoumarin. Zhur.org.khim. 1 no.2:356-  
358 F '65. (MIRA 18:4)

1. Kazanskiy filial Vsesoyuznogo nauchno-issledovatel'skogo  
kinofotoinstituta.

RUL', Ye.F.; KHAYKIN, M.S.; DERSTUGANOV, G.V.

Developing properties of some dephnetin derivatives and tanning action of the products of their oxidation. Zhur. nauch. i prikl. fot. i kin. 10 no.2:146-147 Mr-Ap '65.

(MIRA 18:5)

1. Filial Vsesoyuznogo nauchno-issledovatel'skogo kinofoto-instituta, Kazan'.



AP5004382

described by one of the authors elsewhere (Khaykin, PTE, No. 3, 95, 1961).  
Effective masses were determined from the cyclotron spectra by a formula de-  
termined by the authors in an earlier paper (ZhETF, v. 45, 1304, 1963). The extremal  
points of the Fermi hole surface were determined by the method of cutting off  
the resonance. The value  $0.208 \pm 0.002$  obtained for the effective mass  
of the field directed along the  $z$  axis is in good agreement with other pub-  
lished data. The momentum and velocities of the holes are also estimated. The  
results are discussed and compared with the model of the Fermi surface of indium,  
with the Fermi surfaces of metals having a similar crystal structure  
(minimum), with account taken of the differences in the parameters of these  
metals. It is concluded that the nearly-free-electron approximation not only  
gives a correct idea of the Fermi surface of each individual metal, but also de-  
scribes the variations in the Fermi surface due to differences in the  
parameters of the metals. The authors thank D. L. Karpov for continuous inter-  
est and G. S. Chernyshev and V. A. Indin for technical help.  
Data: 10 figures, 2 formulas, and 1 table.

ABSTRACTOR: Institut fizicheskikh problem Akademii Nauk SSSR, Institute of  
Physics, Academy of Sciences USSR; Fizicheskii Institut IZAN, Physics

NAME: AP5004382

(GKAE)

007154

ENCL: 00

SUB CODE: 66

008

OTHER: 007



L 1567-66

ACCESSION NR: AP5019222

NR: AP5019222

crystallographic directions. It is shown that the energy spectrum of the  
oxidized surface of the sample is different from the energy spectrum of the  
sample before oxidation. The nature of the oxidizing agent used in the oxidation of the  
sample is determined by the results of the X-ray photoelectron spectroscopy.

orig. art. has: 6 figures, 3 formulas, and 1 table.

Orig. art. has: 6 figures, 3 formulas, and 1 table.  
 INSTITUTION: Institut fizicheskikh problem Akademii nauk SSSR (Institute of Phys-  
 ics Problems, Academy of Sciences, SSSR) ..  
 ENCL: 0  
 SIB CODE: 88

18 Feb 65

NR REF SOV: 012

ENC L: 2.

OTHER: 010

SITE CODE: 88

Card 2/2

L 25695-66 EWT(1)/EWT(m)/ETC(f)/EPF(n)-2/ENG(m)/T/ENP(t) IJP(c) AT/JD

ALC 17/002706

SOURCE CODE: F/0056/5/049/006/1695/1705

Author: Zhaykin, M. S.; Edel'man, V. S.

1995: Institute of Physics Problems, Academy of Sciences SSSR (Institut fizicheskikh problemov Akademii nauk SSSR)

1995: Landau damping and resonance damping of magnetoplasma waves in bismuth

1995: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 6, 1995,

1995: TAGS: magnetic field, plasma wave, cyclotron resonance, plasma resonance, Doppler shift, bismuth, single crystal, Doppler effect, magnetoplasma

ABSTRACT: Measurements were made of the magnetic fields which define the region of strong damping of magnetic plasma waves as a result of cyclotron resonance of carriers in the Doppler effect. In the experiments the authors investigated the Doppler effect in the cyclotron resonance of the electrons and holes in a magnetic field. The limit of the range of the Doppler effect in the magnetoplasma waves was determined. In both cases, the experiments involved observation of the magnetoplasma wave modes propagated in a direction parallel to the binary axis in the basal plane of the crystal. The measurements of the cyclotron resonance shift made it possible to determine the Fermi velocities of the electrons along the directions close to the binary axis and the corresponding velocities of holes in the basal plane, and to obtain a more accurate value of the effective mass of the holes at a special point in the Fermi surface of the basal plane. The

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L 25695-66

ACC NR: AF6002706

measurements were made at approximately 9.4 Gc, using two single-crystal discs of bismuth 1.00 and 0.1047 mm thick. The excitation of the plasma waves was observed by measuring the flow of power through a transmission strip resonator enclosing the sample. The experiments were made in a field up to 10 kOe, at a temperature 1.5K. The Fermi velocity of the holes in the basal plane was found to be  $(2.35 \pm 0.1) \times 10^7$  cm/sec, and that of the holes was  $(11.3 \pm 0.5) \times 10^7$  cm/sec along a binary axis. The effective mass of the holes at the limiting point in the Fermi surface in the basal plane was  $(0.220 \pm 0.002)m_0$ . The results are compared with the Fermi-surface parameters obtained from other investigations. Authors are grateful to P. L. Kapitza for interest in the work, R. T. Mina and L. A. Pal'kovskiy for discussing the results, and to G. S. Chernyshev and V. A. Yudin for technical assistance. Orig. art. has: English and formulas.

SUB CODE: 20/ SUBM DATE: 16 Jun 65/ ORIG REF: 007/ OTH REF: 005

Card 2/2

KHARITON, Yu.B.; KONDRAT'YEV, V.N.; BOROVIK-POMANOV, A.S.; ZAVARITSKIY,  
N.V.; MALKOV, M.P.; KHAYKIN, M.S.; SHARVIN, Yu.V.

Aleksandr Iosifovich Shal'nikov; on his 60th birthday. Usp.  
fiz. nauk 87 no.1:171-172 S '65. (MIRA 18:9)

L 111730-66 EMT(m)/EMT(t)/ETI IUP(c) JD

ACC NR: AP6031983

SOURCE CODE: UR/0386/66/004/005/0164/0169

AUTHOR: Khaykin, M. S.

ORG: Institute of Physics Problems, Academy of Sciences SSSR (Institut fizicheskikh problem Akademii nauk SSSR)

TITLE: Oscillatory dependence of the surface impedance of a metal on a weak magnetic field

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 5, 1966, 164-169

TOPIC TAGS: tin, indium, cadmium, aluminum, tungsten, copper, bismuth, galvanomagnetic effect, surface property, electric impedance, electron scattering

ABSTRACT: The author explains the physical causes of the oscillatory dependence of the surface impedance  $Z$  on a weak magnetic field  $H$  in the microwave region, recently observed in Sn, In, Cd, Al, Cu, and W, and reports some results of its investigation in Bi, chosen because its Fermi surface has been investigated in detail. The explanation is based on an allowance for the contributions made to the microwave current by electrons moving along arcs whose centers lie above the surface of the metal. These electrons penetrate to a certain depth and return after some time to the surface, from which they are scattered (or reflected). Two possible electron orbits are considered, and it is shown that the proposed explanation applies to both. An estimate of the period of the oscillations yields for ordinary metals (Sn) at  $\omega = 6 \times 10^{10} \text{ sec}^{-1}$  a

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L 44730-66

ACC NR: AP6031983

value  $\approx 3$  Oe, which agrees with published experimental data. The value obtained for  $B_1$  is  $\approx 0.3$  Oe, which also agrees with experiment. Whereas the impedance oscillations in ordinary metals have the character of rather smooth curves, the oscillations in  $B_1$  have an essentially different form, with narrower peaks accompanied by suboscillations on the side of the larger fields. The sharpening of the oscillations may be attributed to the contribution of the electrons that have experienced an  $m$ -fold specular reflection from the surface, but the appearance of the suboscillations is not fully explained. It is concluded that the proposed explanation of the origin of the oscillations in a weak field apparently solves the problem in principle, but the development of an exact theory is still necessary. The author thanks P. L. Kapitza for interest in the work and R. T. Mina and V. S. Edel'man for a discussion. Orig. art. has: 2 figures and 2 formulas.

SUB CODE: 20/ SUBM DATE: 06Jun66/ ORIG REF: 006/ OTH REF: 005

LS  
Card 2/2

L 45104-66 EWT(1)/EWT(m)/EEC(k)-2/T/EWP(t)/T/I/EWP(k) LJP(c) WG/RTW/JD  
 ACC NR: AP6024865 SOURCE CODE: UR/0056/66/051/001/0062/0086

AUTHOR: Mina, R. T.; Khaykin, M. S.

ORG: Institute of Physical Problems of the Academy of Sciences, SSSR (Institut fizicheskikh problem Akademii nauk SSSR); Physics Institute GKAE (Fizicheskii institut GKAE)

TITLE: Investigation of the fermi surface and current carrier velocities in indium by the cyclotron resonance method

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 1, 1966, 62-86

TOPIC TAGS: fermi level, cyclotron resonance, effective mass, indium, CURRENT CARRIER, ELECTRON HOLE

ABSTRACT: The results of the systematic investigation of cyclotron resonance in indium single crystals are presented. The measurements were carried out at a frequency of 18.7 Gc/s and a sample temperature of 1.5K. Anisotropy of the hole and electron effective masses was studied in the (010), (110), (111), (011), and (001) crystallographic planes. The velocities of the current carriers on the Fermi surface were determined by analyzing the results obtained. The hole velocity on the "rib" of the surface lying in the (001) Brillouin plane was found to be equal to  $0.73 \times 10^8$  cm/sec. The anisotropy of the effective masses (a change from 0.11 to  $2.2 m_e$ , and of the current-carrier velocities (from  $0.73 \times 10^8$  to  $1.10 \times 10^8$  cm/sec), was in good agreement with the almost free electron model,

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L 45104-66

ACC NR: AP6024865

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providing the mass  $m_c$  of the current carriers is taken to be equal to  $1.6 m_e$ . The dimensions of the hole Fermi surface along the [100] and [001] directions (0.91 and 0.79 h/a, respectively) were determined by making use of the resonance cyclotron cut-off effect in a thin sample. A number of experimental facts which are not consistent with the almost free electron-value model were established. In order to explain them, calculations of some features of the Fermi surface model were performed. These yielded the effective potentials the indium lattice  $|V_{111}| = 0.07 \pm 0.015$ ;  $|V_{002}| = 0.055 \pm 0.01$ ;  $|V_{200}| < 0.015$  in (h/a) /  $2m_c = 0.329$  Ry units. Orig. art. has: 18 formulas, 14 figures, and 4 tables. [CS]

SUB CODE: 20/ SUBM DATE: 11Feb66/ ORIG REF: 012/ OTH REF: 015

Card 2/2 blg

L 04407-67 EWT(d)/EWT(1)/EWT(m)/T/EWP(t)/ETI IJP(s) LS/AD/WW

ACC NR: AP6034420

SOURCE CODE: UR/0386/66/004/008/0290/0295

AUTHOR: Khaykin, M. S.; Krasnopolin, I. Ya.

ORG: Institute of Physics Problems, Academy of Sciences SSSR (Institut fizicheskikh problem Akademii nauk SSSR)

TITLE: Nonlinearity of resistance of a metallic point contact and detection of microwaves at helium temperatures

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki. Pis'ma v redaktsiyu. Prilozheniye, v. 4, no. 8, 1966, 290-295

TOPIC TAGS: resistivity, nonlinear effect, low temperature research, electron flow, superconductivity, volt ampere characteristic, microwave detection

ABSTRACT: In view of recent investigations of the nonlinearity of the electric resistance of point contacts cooled with liquid helium, with one of the electrodes made either of a semimetal or a superconductor, the authors report some results of a study of the properties of contacts of ordinary pure metals which are in the normal state at low temperatures. The objects of the investigation were contacts made of thin Pt wire (10  $\mu$  dia) and a bulky Sn sample (other materials were also tested). The contact produced at liquid-helium temperature by welding with a weak electric discharge. Two methods were used to study the behavior of the resistance R of the contact: plotting the static voltage-current characteristics (V(I), and measurement of the low-frequency voltage A obtained by detecting in the contact modulated microwave radiation (40 GHz;

Cord 1/2

L 04407-67

ACC NR: AP6034420

5

10 - 100  $\mu$ W, obtained from the open end of a waveguide introduced into the Dewar vessel and beamed on the investigated contact, which was placed in liquid helium). The static volt-ampere characteristics  $V(I)$  of the welded contacts disclosed the presence of a region of nonlinearity of  $R$ , which in some cases narrows down and degenerates in practice into a jump of  $R$ . Similar effects were observed also in contact produced without welding from Pt, Sn, Al, Cu, Au, Nb, and Bi, merely by slightly touching the sharp point and the bulky sample. Increasing the area of the contact by pressing against the point led to vanishing of the nonlinearity of the resistance of the contact and of the detection effect. These facts give grounds for assuming that the nonlinearity of the resistance of the point contact is due principally to the contact geometry and not to individual properties of the metals constituting the contact. The authors relate the nonlinearity of the resistance to changes in the drift velocity acquired by the electrons moving through the contact region. These electrons can radiate effectively hypersonic phonons of wavelength  $\sim 10^{-6}$  cm, i.e., of the order of the dimensions of the contact. This favors excitation of coherent induced emissions of phonons from inside the contact, and this should cause deceleration of the electrons in the contact, i.e., an increase of resistance. The observed jumps in contact resistance are probably manifestations of the peculiarities of the phonon spectrum of the metallic crystal serving as the contact electrode. The authors thank P. L. Kapitsa for interest in the work, R. T. Mina and V. S. Edel'man for a discussion, and G. S. Chernyshev and V. A. Yudin for technical help. Orig. art. has: 3 figures.

SUB CODE: 20/ SURM DATE: 12Jul66/ OTH REF: 006

Card 2/2

ACC NR: AP6037066

SOURCE CODE: UR/0056/66/051/005/1363/1368

AUTHOR: Mina, R. T.; Edel'man, V. S.; Khaykin, M. S. .

ORG: Institute of Physics Problems, Academy of Sciences, SSSR (Institut fizicheskikh problem Akademii nauk SSSR); Yerevan Physics Institute (Yerevanskiy fizicheskii institut)

TITLE: Cyclotron resonance of carriers in aluminum

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 51, no. 5, 1966, 1363-1368

TOPIC TAGS: aluminum, cyclotron resonance, current carrier, carrier scattering, crystal surface, surface property, magnetoresistance

ABSTRACT: To obtain more accurate data on the anisotropy of the effective masses of the carriers than afforded by the various orthogonalized plane-wave models, the authors investigated the carrier velocity by a cyclotron resonance procedure, determining the cyclotron resonance of the electrons and holes in the (010) plane of aluminum at frequencies 9.45 and 18.7 GHz. The single-crystal aluminum investigated was the same as was studied by Ye. P. Vol'skiy (ZhETF v. 46, 123, 1964). The cyclotron resonance measurements were made by the method of frequency modulation in a magnetic field up to 10 kOe at a sample temperature 1.5K. Cooling of the sample from 4.2 to 1.5K more than doubled the cyclotron resonance amplitude. The values of the effective masses were determined from plots of the logarithmic derivative of the re-

Card 1/2

APPROVED FOR RELEASE

Card 2/2

KHAYKIN, M.V.

Conference in the Caucasian Mineral Waters District on problems  
of fangoththerapy. Vop.kur.fizioter. i lech.fiz. kul't. 23 no.4:381-383  
Jl-Ag '58 (MIRA 11:8)  
(EARTHS, MEDICAL AND SURGICAL USES OF)

KHAYKIN, M. Z.

"Organization of Home Medical Aid in Cities  
of the USSR." Thesis for degree of Cand.  
Medical Sci. Sub 29 Nov. 50, Acad Med Sci  
USSR

Summary 71, 4 Sep 52, Dissertations Presented  
for Degrees in Science and Engineering in Moscow  
in 1950. From Vechernyaya Moskva, Jan-Dec 1950.

KHAYKIN, M.Z.

USSR/Medicine - Public Health

Jul/Aug 52

"Motion Pictures as Training Aids in Instruction of Public Health and Medicine," M. Z. Khaykin, Chair of the Organization of Pub Health, Khabarovsk Med Inst

"Sov Zdrav" Vol XI, No 4, pp 24-26

The Khabarovsk Inst of Med early in 1951 instituted motion picture lectures with sound effects. Subjects shown included lives and accomplishments of Soviet physicians and scientists, latest achievements in the fields of biology, microbiology, histology, medicine and hygiene. Step-by-step illustrations of surgical operations were shown,

221737

performed by men outstanding in their profession: obstetrics, including prenatal care, delivery and postpartum. Public Health series showed the students methods of implementing public health and sanitation in rural and industrial areas. In the period of 1951/1952, 50 training lectures have been given, attended by 3,600 students.

221737

1. KHAYKIN, M. Z.
2. USSR 600
4. Nurses and Nursing
7. Organization of nursing at the regional medical center, Med. sestra, No. 12, 1952.

9. Monthly List of Russian Accessions, Library of Congress, April 1953, Uncl.

KHAYKIN, M.Z., dotsent (Gomel')

Recording doctors' appointments. Sov.zdrav. 16 no.3:44-45 Mr '57.  
(RECORDS, MEDICAL (MIRA 10:6)

list of doctors' appointments in dispensaries)  
(OUTPATIENT SERVICES

keeping lists of doctors' appointments)

KHAYKIN, M.Z. dots., starshiy nauchnyy sotrudnik.

Conference on practice and science devoted to clinical aspects,  
diagnosis and treatment of cholecystitis. Vop.kur., fizioter.  
i lech. fiz. kul't. 23 no.5:477-480 S-O '58 (MIRA 11:11)

1. Bal'neologicheskiy instituta na Kavkazskikh Mineral'nykh  
Vodakh.

(GALL BLADDER—DISEASES)

KHAYKIN, M.Z., dotsent

All-Russian Conference on Problems of Health Resort Therapy for  
Diseases of the Female Generative Organs. Vop. kur., fizioter.  
i lech. fiz. kul't. 26 no.1:87-90 '61. (MIRA 14:5)  
(GENERATIVE ORGANS, FEMALE--DISEASES)  
(THERAPEUTICS, PHYSIOLOGICAL--CONGRESSES)

KHAYKIN, M.Z., dotsent

Out-of-town session of the Academy of Medical Sciences of the  
U.S.S.R. in the Caucasus mineral waters region. Vop. kur.,  
fizioter. i lech. fit. kul't. 24 no.6:557-563 N-D '59.  
(MLA 15:1)

1. Pyatigorskiy bal'neologicheskiy institut.  
(THERAPEUTICS, PHYSIOLOGICAL CONGRESSES)

ZYKOV, S.; KHAYKIN, N.

Changes in the professional composition of coal miners under the  
influence of technological progress. Biul.nauch.inform.: trud i zar.  
plata 4 no.5:16-18 '61. (MIRA 14:5)  
(Coal mines and mining)

KHAYKIN, N.

Important problems of miners' vocational education. Prof.-tekh.  
obr. 18 no. 7: 7-9 J1 '61. (MIRA 14:7)  
(Mining engineering--Study and teaching)

NAZAROV, V.; KHAYKIN, N.

Four-year vocational and technical schools. Prof.-tekh.obr, 20  
no.2:3 F '63. (MIRA 16:2)

1. Glavnyy spetsialist po gornomu delu Gosudarstvennogo  
komiteta po professional'no-tekhnicheskomu obrazovaniyu (for  
Nazarov). 2. Starshiy inzhener nauchno-issledovatel'skoy  
laboratorii Gosudarstvennogo komiteta po professional'no-  
tekhnicheskomu obrazovaniyu (for Khaykin).  
(Miners--Education and training)

... of the ... of photoconductivity is high-resistance  
... layer deposited with gold

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L 40045-66 ENT(1)

SOURCE CODE: UR/0120/66/000/003/0172/0174

ACC NR:AP6022022

AUTHOR: Khaykin, N. Sh.

ORG: none

TITLE: Setup. for measuring sensitivity-frequency characteristics of photodetectors

SOURCE: Pribery i tekhnika eksperimenta, no. 3, 1966, 172-174

TOPIC TAGS: radiation receiver, photoreceiver, photodiode, RADIATION DETECTOR,  
FREQUENCY CHARACTERISTIC

ABSTRACT: A method of undesirable-pickup suppression and a setup. for measuring sensitivity-frequency characteristics of radiation detectors (photodiodes, photomultipliers) are described. Essentially, the radiation flux modulated by an electro-optical element is once more modulated at  $\Omega \gg (2-3)\Delta\omega$ , where  $\Delta\omega$  is the passband width of an analyzer that records the photoresponse of the test detector; the second modulation is accomplished by a mechanical (60-kc) modulator. An experimental setup included a Kerr cell and operated satisfactorily within 1-120 Mc. It was used for testing a few photodiodes (1-35 Mc) and a photomultiplier (1-80 Mc). "In conclusion, the authors wish to thank S. A. Kaufman for his constant attention to the work and discussing the manuscript and also V. A. Voronin, V. P. Sushkov, and M. A. Trishenkov for their part in the development of the outfit." Orig. art. has: 3 figures and 1 formula. [03]

SUB CODE: 09 / SUBM DATE: 12Jun65 / ORIG REF: 002/ ATD PRESS: 5052

UDC: 535.232.6

Card 1/1 *gd*

KH/YKIM, S. B.; RAYKHMAN, I. Ye.

They write to us. Transp. stroi. 13 no.3:62 Mr '63.  
(MIRA 16:4)

1. Nachal'nik mostopoyezda No. 421 tresta po stroitel'stvu mostov Glavmoststroy. Ministerstva transportnogo stroitel'stva SSSR (for Khayb). 2. Nachal'nik tsekha zhelezobetonnykh konstruktsiy kombinata podsobnykh predpriyatiy Iuzhuraltransstroya (for Raykhman).

(Construction industry)

KHAYKIN, S.B.

Design of precast supports for large and medium bridges. Tranap.  
stroi. 14 no.6:15-17 Je '64. (MIRA 18:2)

KHAYKIN, S.B.

Give greater attention to stages of work to be completed. Transp. stroi.  
14 no. 7:60-61 J1 '64. (MIRA 18:1)

1. Nachal'nik mostopoyezda No. 421.

KHAYKIN, S.E.

KOROLEV, D.V., PARIYSKIY, YU N., TIMOFEEVA, O.M., KHAYKIN, S.E.

High Resolution Radio Observations of Venus and Jupiter at the  
Pulkovo Observatory.

Report to be submitted for the 4th International Space Science Symposium  
(COSPAR) Warsaw, 2-12 June 63

KHAYKIN, Semen Emmanuilovich; GPIGOROVA, V.A., red.; MURASHOVA, N.Ya.,  
tekhn. red.

[Physical bases of mechanics] Fizicheskie osnovy mekhaniki.  
Moskva, Fizmatgiz, 1962. 772 p. (MIRA 16:4)  
(Mechanics)

VVEDENSKIY, B.A., glav. red.; VUL, B.M., glav. red.; SHTeynMAN, R.Ya., zam. glav. red.; BALDIN, A.M., red.; VONSOVSKIY, S.V., red.; GALANIN, M.D., red.; ZERNOV, D.V., red.; ISHLINSKIY, A.Yu., red.; KAPITSA, P.L., red.; KAPTSOV, N.A., red.; KOZODAYEV, M.S., red.; LEVICH, V.G., red.; LOYTSYANSKIY, L.G., red.; LUK'YANOV, S.Yu., red.; MALYSHEV, V.I., red.; MIGULIN, V.V., red.; REBINDER, P.A., red.; SYRKIN, Ya.K., red.; TARG, S.M., red.; TYABLIKOV, S.V., red.; FEYNBERG, Ye.L., red.; KHAYKIN, S.E., red.; SHUBNIKOV, A.V., red.

[Encyclopedic physics dictionary] Fizicheskii entsiklopedicheski slovar'. Moskva, Sovetskaya Entsiklopediya.  
Vol.4. 1965. 592 p. (MIRA 18:1)

COMMON ELEMENTS		SPECIAL ELEMENTS		CLASSIFICATION	
<p>1. <i>Physik. Z. Supplement 9, 604 21(1939) (in French).</i> If it is assumed that a liquid is composed of mol. groups of ultramicroscopic dimensions and that the frictional forces of the cryst. structure which oppose slipping in the solid state are not conserved, the known Brownian movement of mol. groups, the appearance of the forces of viscosity, and their linear variation as a function of the velocity gradient may be explained. Comparison of the viscous forces with the solid slipping forces permits evaluating the dimensions of the groups. Max. diams. of <math>3 \times 10^{-7}</math> to <math>1.5 \times 10^{-6}</math> cm. were calculated. Also, if fusion is assumed to be a disintegration of the crystal into mol. groups of ultramicroscopic dimensions, the relation between the latent heat of fusion and the heat of sublimation at zero abs. gives the relation of the no. of bonds broken during the fusion to the total no. of bonds existing in the crystal, permitting equally the calcul. of the dimensions of the groups. This result is of the same order of magnitude. The variation of the coeff. of viscosity as a function of temp. is explained very simply by admitting that the no. of broken bonds increases with temp., involving a diminution of the av. dimensions of the groups and, in consequence, an alteration of their Brownian movement. A law for the variation of viscosity with temp. is obtained that agrees well with exptl. results for Sb, Sn, Hg, Bi, Hg<sup>2</sup> and Cl<sub>2</sub>. It is not necessary to assume that the groups are permanent. The theory developed here permits only the description of the movement of a liquid as a slipping movement of small groups of mols., whose nature is similar to that of the Brownian movement. G. M. Petty</p>		<p>2.</p>		<p>1. <i>Physik. Z. Supplement 9, 604 21(1939) (in French).</i> If it is assumed that a liquid is composed of mol. groups of ultramicroscopic dimensions and that the frictional forces of the cryst. structure which oppose slipping in the solid state are not conserved, the known Brownian movement of mol. groups, the appearance of the forces of viscosity, and their linear variation as a function of the velocity gradient may be explained. Comparison of the viscous forces with the solid slipping forces permits evaluating the dimensions of the groups. Max. diams. of <math>3 \times 10^{-7}</math> to <math>1.5 \times 10^{-6}</math> cm. were calculated. Also, if fusion is assumed to be a disintegration of the crystal into mol. groups of ultramicroscopic dimensions, the relation between the latent heat of fusion and the heat of sublimation at zero abs. gives the relation of the no. of bonds broken during the fusion to the total no. of bonds existing in the crystal, permitting equally the calcul. of the dimensions of the groups. This result is of the same order of magnitude. The variation of the coeff. of viscosity as a function of temp. is explained very simply by admitting that the no. of broken bonds increases with temp., involving a diminution of the av. dimensions of the groups and, in consequence, an alteration of their Brownian movement. A law for the variation of viscosity with temp. is obtained that agrees well with exptl. results for Sb, Sn, Hg, Bi, Hg<sup>2</sup> and Cl<sub>2</sub>. It is not necessary to assume that the groups are permanent. The theory developed here permits only the description of the movement of a liquid as a slipping movement of small groups of mols., whose nature is similar to that of the Brownian movement. G. M. Petty</p>	

*KHAYKIN, S. E.*

ANDRONOV, ALEKSANDR ALEKSANDROVICH, and S. E. KHAYKIN.

Teoriia kolebani. S pred. L. I. Mandel'-shtama. Tom I. Moskva,  
Ob "edinennoe nauch.-tekhn. izd-vo, 1937. 518 p., daigrs.

Bibliography: v. 1, 514-518.

Title tr.: Theory of oscillations. v. 1.

QA871.A5

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of  
Congress, 1955.

Name: KHAYKIN, S.E.  
Title: professor

Wrote a chapter on oscillations which appears on pp.300-330 of the book, "Mathematics and Natural Science in the USSR." Author traces the development of knowledge concerning oscillations. Credit is given Soviet physicists for the development of the linear theory of oscillations.

REF: *radio print* R. P. #21-22, p.63, 1938

m. a.

"Experimental Investigation of "Dry Friction" Forces. S. Khaykin, I. Lavrovsky, and A. Solomonovich (*J. Physics (U.S.S.R.)*, 1943, 1, 75-76, 143-144; *Brit. Chem. Abs.*, 1941, [A1], 161). [In English.] A dynamic method of measuring tangential and normal forces between surfaces in contact at very small displacements is described. The method depends on the change in shape of the resonance curve of a quartz oscillator produced by contact with another body. At displacements insufficient to cause sliding, Hooke's law is obeyed for displacements up to  $\sim 10^{-7}$ - $10^{-6}$  cm. At greater displacement the force between the surfaces increases more slowly than the displacement. Increase in the pressure between the surfaces increases the deviation from linearity. The limiting angle of friction decreases in the amplitude range where deviation from Hooke's law is already marked. The deviations occur at comparable displacements and pressures for both normal and tangential displacements.

1943

RUSSIAN AND ENGLISH																																	
PUBLISHED AND PROPERTIES INDEX																																	
KHAYKIN, S. Y.																																	
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<p>*On the Phenomenon of Overheating a Solid Body. [Tin Wires.] S. F. Khaykin and N. P. Benet (<i>Compt. rend. (Akad. Sci. U.R.S.S.</i>, 1939, [N.S.], 22, (1), 31-35).--[In English.] Experimental evidence is given to show that tin wires of 8-10 mm. diameter and 10-12 cm. length behave differently on melting by careful electric heating, according to whether they are single crystal wires or not. In polycrystalline wires the melting process starts in the centre of the wire, and penetrates to the surface. On the other hand, single-crystal wires melt first at the surface. Since the temperature increases with depth (an effect intensified by the air cooling of the surface), it has to be assumed that the internal temperature exceeds the melting point by up to 2° C. Thus, a single crystal may not melt, even though its temperature exceeds the melting point, and the more perfect the single crystal, the greater is the superheating it can undergo. It is concluded that for a solid to melt, not only must the melting point be reached, but certain other specific conditions must be fulfilled.--N. H. V.</p>																																	
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KHA<sup>Y</sup>KIN, SEMEN EMMANUILOVICH

Mekhanika. Utverzhd. v kachestve uchebnika dlia fizich. fak-tov universitetov i fiz. -matem. fak-tov pedagog. in-tov. Moskva, Gostekhizdat, 1940. 371 p. illus. (Obshchii kurs fiziki, T. I.)

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ELC: QA405.K48

SO: Manufacturing and Mechanical Engineering in the Soviet Union, Library of Congress, 1953.

STANDARD SPECIFICATION												PROCESS AND PROPERTY INDEX												TEST AND 6TH DEGREE											
U.S.E.												<i>Geophysical and Extraterrestrial Phenomena</i>																							
Investigations of Solar Radiation by the Brazil Expedition of the Academy of Sciences of the U.S.S.R. for Observing the Solar Eclipse of 20th May 1947. S. E. Khaykin & M. Chukhachev. Izv. Akad. Nauk SSSR Ser. Fiz.-Mat. Nauki, Vol. 48, No. 10, pp. 1024-1026. In Russian. A report on observations made in a ship off the Brazilian coast. The results are plotted and discussed: they show on the minimum total radiation intensity of the eclipsed sun is about 4% of that when the sun is not eclipsed, 2) that the variation of the intensity is displaced with regard to the geometrical eclipse. It is concluded that the observed total radiation is generated in the upper layers of the sun's atmosphere not covered by the moon's shadow, and that the radiation intensity is not uniformly distributed over the surface of the radiating sphere.												1185																							
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FRAYNIN, SEMEN IOSEFVICH

Science

Mechanics; Izd. 2, dopol. i perer. Moskva, Gos. izd. tekhn. -teoret. lit-ry, 1947.

9. Monthly List of Russian Accessions, Library of Congress, May 1952 ~~1953~~, Uncl.

USSR/Radio

Jan 48

Radio Waves - Propagation  
Solar Science

"Radio Emanation from the Sun," Prof S. E.  
Khaykin, 3 $\frac{1}{4}$  pp

"Radio" No 1

General account of expeditions of the Acad Sci  
USSR which were sent to various parts of the Soviet  
Union to study solar radio emanation.

3/49790

KHAYKIN, S. E., PROF

PA 4/49T79

USSR/Radio

Circuits, Oscillator

Apr 48

"Oscillator Circuit," Prof S. E. Khaykin, 3 pp

"Radio" No 4

First of series of articles, and elementary discussion of the operation and basic uses of an oscillator circuit.

4/49T79

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100

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KHAYKIN, S. E.

PA 9/49T45

USSR/Electricity  
Electrolytes  
Resistance, Electrical - Changes

Jul 48

"The Effect of Rapid Changes of Temperature and Pressure on the Electrical Resistance of Electrolytes," Ya. I. Likhner, S. E. Khaykin, Phys Inst Invent P. N. Lebedev, Acad Sci USSR, 9 pp

"Zhur Ekspert 1 Teoret Fiz" Vol XVIII, No 7

Study of very small changes in electrical resistance of an electrolyte (solution of  $\text{AgNO}_3$  in water) caused by variation in pressure and temperature during propagation of ultrasound. Established that

9/49T45

USSR/Electricity (Contd)

Jul 48

temperature coefficient of resistance to ultrasound at frequency 285 kc remains same for constant temperature ( $\beta = 2.16 \times 10^{-2} \text{deg}^{-1}$  at 20 C). Determination of value of piezocoefficient of electrolyte, which was found to be equal to  $\gamma = 107 \times 10^{-6} \text{cm}^{-1}$  (first measured size).

9/49T45

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ANDRONOV, ALEKSANDR ALEKSANDROVICH, and S. E. KHAYKIN.

Theory of oscillations, by A. A. Andronow and S. E. Chaikin.  
English language ed., edited under the direction of Solomon Lefschetz.  
Princeton, Princeton Univ. Press, 1949. ix, 358 p., diagrs.  
A condensation of the author's "Teoriia kolebaniy" v. 1.  
Bibliography: p. 349.

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Congress, 1955.

<p><b>KHAYKIN, S. E.</b></p>										<p><b>33</b></p>									
<p><b>Dynamic Method for Investigation of Electrical Contacts.</b> (In Russian.) S. E. Khaykin, G. K. Demishev, and A. E. Salomonovich. <i>Doklady Akademii Nauk SSSR</i> (Reports of the Academy of Sciences of the USSR), new ser., v. 70, Feb. 1, 1950, p. 609-611.</p>																			
<p>Describes above method, characterized by use of a metallized quartz piezoelectric resonator as one of the contact surfaces and a metal plate resting freely on the surface of the resonator as the other. Theoretical bases of this method are indicated. Proposed formulas are interpreted.</p>																			
<p><b>ASAC - S. E. A. METALLURGICAL LITERATURE CLASSIFICATION</b></p>																			
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Moskva, Gosenergoizdat, 1952 318 P. Illus., Tables, Diags.  
(Massovaya Radio Biblioteka Eyp. 131)

So: N/5  
912.653  
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"Radio Waves."

So. Radio, Vol. 1, p. 56, 1952

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S. E.  
KHAYKIN, PROF. J.

PA 236T20

USSR/Electronics - Personalities Jun 52  
Antennas

"Winner of the A. S. Popov Gold Medal," Prof  
S. Khaykin

"Radio" No 6, pp 5-7

The principal work of M. A. Leontovich, winner  
of the A. S. Popov Gold Medal, has been in the  
study of problems of radiation and propagation  
of electromagnetic waves on the basis of electro-  
dynamics. The "approximate boundary conditions"  
which he derived in 1940 led to the solution of

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many problems in wave propagation. Leontovich  
has also worked in statistical physics, particu-  
larly on internal noise in receivers.

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THAYEN, S., PROF.

Telephone, Wireless

Radio-telephony. Radio no. 8, 1952.

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FHAYKIN, S.

Electric Waves

Radio waves. Radio 29 no. 1, 1952.

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MEYER, J.

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Electric oscillations. Radio, 29, No. 3, 1952.

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**KHAYKIN, S.E.; KULIKOVSKIY, A.A., redaktor; LARIONOV, G.Ye., tekhnicheskii  
redaktor**

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**Gos. energ. izd-vo, 1953. 125 p. (Massovaya radiobiblioteka, no.181)**  
[Microfilm] (MLRA 7:10)  
(Oscillators, Electron-tube)

1. KHAYKHAN, J., Prof.

2. USSR (600)

4. Radio - Receivers and Reception

7. Detection, Radio No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.